



(12)

## EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification :  
13.05.92 Bulletin 92/20

(51) Int. Cl.<sup>5</sup> : **D05B 11/00**

(21) Application number : **89200451.6**

(22) Date of filing : **22.02.89**

(54) **Sewing device for mattresses or cushions.**

(30) Priority : **26.02.88 NL 8800505**

(43) Date of publication of application :  
30.08.89 Bulletin 89/35

(45) Publication of the grant of the patent :  
13.05.92 Bulletin 92/20

(84) Designated Contracting States :  
**AT BE CH DE ES FR GB GR IT LI LU NL SE**

(56) References cited :  
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**EP 0 330 285 B1**

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## Description

The present invention relates to a device for sewing, along the edges of a mattress or cushion, the material covering the top and bottom of the mattress to the material covering the sides of the mattress, provided with a supporting face which is movable for moving the mattress along a sewing machine which has a sewing needle which can be pushed through the mattress material which covers the edge area of the top or bottom and the mattress material which covers the adjacent edge area of the side, which mattress is resting on the supporting face.

Such known sewing devices are operated by a person who stands in the vicinity of the sewing machine next to the supporting table at the side where the mattress with covering material is fed in to the sewing machine. He holds the material to be sewn firmly so that it is sewn up correctly by the sewing machine at the edge of the mattress. At the same time a narrow strip is fed in which is also sewn on and covers the seam as a decoration. When the material covering the mattress is sewn along an edge up to a corner of the mattress, the operating personnel have to stop the sewing machine and possibly the supporting face and swing the mattress through 90° by hand, following which the sewing machine and the supporting face are set in motion again.

These known sewing devices have various disadvantages. First of all, the work load on the operating personnel is great. Not only does the operating person have to ensure that the material which covers the mattress and is to be sewn up is held in the correct position for sewing up, but he must also stop the sewing operation at the corner at the correct moment, and then turn the mattress by hand through 90°. All this has to be carried out with fairly high accuracy, as otherwise the material covering the mattress will not sit correctly against the mattress surface after sewing up. In the case of larger mattresses in particular, the problem occurs that great effort has to be applied to swing the mattress through 90°, which in the long run, because the personnel become tired, has an adverse effect on the accuracy of the sewing operation. See also document GB.A.150 206.

The object of the invention is therefore to produce a device of the type mentioned in the preamble which is simpler to operate, without great exertion. This is achieved according to the invention in that, in the direction of movement of the supporting face beyond the sewing machine, there is a swingable arm which can be swung between a position parallel to and a position essentially perpendicular to said direction of movement, near the swivel point of said arm there is a first sensor for the detection of a hindmost mattress corner in the direction of movement of the supporting face, and holding means for holding the mattress at said corner, the sensor and the drive units for sewing

machine, supporting face, holding means and swingable arm being connected to a control device suitable for stopping the sewing machine and supporting face on detection of a corner and for bringing the holding means and the swingable arm into the operating position so that the mattress can be swung through 90° round the held corner, and for subsequently returning the holding means and the swingable arm to the idle position again.

As soon as an edge of the mattress has been sewn with the sewing device according to the invention, the mattress is automatically swung through 90° by the swingable arm. This dispenses with the part of the work of the operating personnel which requires great effort. Besides, the operating person no longer has to watch carefully to see whether the corner of the mattress has been reached, in order to stop the drives, since this takes place automatically. He can therefore concentrate better on feeding in the material covering the mattress in the correct position to the sewing machine, with the result that the accuracy of the sewing operation can be maintained without too much difficulty. Moreover, due to the fact that the mattress is held at the correct place by holding means, it is ensured that when the sewing machine and the supporting face are set in motion again the next edge is sewn from the correct point. It must be ensured here that the turning point of the mattress is precisely at the point of intersection of the sewing seams of adjacent edges. The sewing device can be designed in such a way that the sewing machine and the supporting face can be restarted either automatically or by hand.

Holding means meeting the above-mentioned conditions can be designed in various ways. According to a first possible embodiment, the device has a second sensor for detecting the position of the sewing needle, said second sensor being connected to the control device in such a way that on detection of a mattress corner by the first sensor the sewing needle can be stopped in the extended position and in that position constitutes the holding means for the turning of the mattress. In the case of this design it is always ensured that the turning point of the mattress coincides with the point of intersection of the sewing seams of adjoining mattress edges. Although the sewing needle runs at an angle relative to the surface of the supporting face and therefore intersects the imaginary pivot line of the mattress, this does not constitute any problem because the materials to be sewn and the mattress are supple and the sewing needle runs through these materials for only a short distance.

As already mentioned, the mattresses to be sewn with the sewing device can differ considerably as regards their weight. The same applies to the forces occurring during the swinging of the mattress. In the case of heavy mattresses the problem can occur that the fairly thin sewing needle will be too greatly stressed and will bend. In these cases the sewing needle

cannot therefore be used as a holding means, but according to a second possible embodiment provision is made for the holding means to be an extendible and retractable auxiliary needle near the sewing needle, and that a second sensor is fitted to detect the position of the sewing needle connected to the control device, in such a way that on detection of the mattress corner by the first sensor the sewing needle can be stopped in the retracted position and the auxiliary needle can be brought into the extended position. The auxiliary needle can be made thicker than the sewing needle, so that such an auxiliary needle is also suitable for use as a holding means for heavier mattresses. This auxiliary needle can be placed in such a way that it coincides with the pivot line of the mattress.

According to another embodiment, provision can be made for a third sensor in the direction of movement of the mattress before the sewing machine, which sensor is connected in such a way to the control device that the driving speed of the drive units of sewing machine and supporting face can be reduced gradually on detection of the mattress corner. The advantage of this is that the sewing machine does not stop too abruptly, which is bad for the sewing mechanism. Slowing down the sewing operation at the end of a mattress edge also simplifies the job of the operating personnel, in particular if the operating person still has little experience. The distance along which the slowing-down takes place can be selected at various lengths by fitting the sensor so that it is displaceable in the direction of movement of the mattress.

The drive units of the supporting face and the sewing machine are preferably coupled by means of a synchronization device in such a way that the mattress can be moved in a straight line along the sewing machine. This is because if the speed of movement of the supporting face were, for example, to be lower than that of the sewing machine, the mattress would be pulled crooked, which is of course undesirable. The opposite case, in which the speed of advance of the supporting face is greater than that of the sewing machine, would also give rise to problems.

The supporting face can also be set up at an angle, a guide strip being provided at the low side of the supporting face. With this design it is always ensured that the mattress rests against the guide strip.

In practice, the process of sewing a mattress is such that the start of the sewing seam is set up at any point on an edge between two mattress corners. At the end of the sewing operation of a complete mattress edge the operating person has to watch out for this starting point of the sewing seam, so that the edge in question is fully sewn. On the other hand, it is pointless to sew part of the edge twice. In this respect also it is possible according to the invention to obtain a simplification of the work by providing the control device with a first memory element for storage of a first num-

ber of stitches, a second memory element for storage of a second number of stitches, a counting device for counting the corners detected by the first sensor, a counting device for adding or subtracting the stitches for counting the first number of stitches between the first stitch and the first corner, for counting the second number of stitches between the second and the third corner, and for subtracting the stitches from the second number of stitches after detection of the fourth corner, and an element connected to the drive units for comparison of the first and second number and for stopping the drive units if the second number is equal to or smaller than the first number. In this way it is possible to take care of any overlap of the sewing seams by allowing the difference to drop a little to below the number of stitches which were counted for detection of the first corner.

According to a variant, if the sewing speed is constant, the device can be designed in such a way that it is provided with a first memory element for storing a first number of time units, a second memory element for storing a second number of time units, a counting device for counting the corners detected by the first sensor, a counting device for adding or subtracting the time units for counting the first number of time units between the first stitch and the first corner, for counting the second number of time units between the second and the third corner, and for subtracting the time units from the second number of time units after detection of the fourth corner, and an element connected to the drive units for comparing the first and second number and for stopping the drive units if the second number has become equal to or less than the first number.

The invention will now be explained in greater detail below with reference to a number of examples of embodiments.

Fig. 1 shows the top view of a sewing device for mattresses according to the invention;

Fig. 2 shows a side view of the device of Fig. 1;

Fig. 3 shows a front view of the sewing device according to Fig. 1;

Fig. 4 shows a front view corresponding to Fig. 3 of a second embodiment of the sewing device;

Fig. 5 shows a block diagram of the control device of the sewing device.

The sewing device shown in Fig. 1 has a supporting face in the form of an endless conveyor belt 1, running round pulleys 2, 3. The conveyance direction is indicated by arrow 4. Beside the conveyor belt 1 is the guide strip 5, above which is the sewing machine 6. A swingable arm 7 is provided beyond the sewing machine in the direction of conveyance and can be swung to the position 8 shown by broken lines. On the conveyor belt is a mattress 9 whose material covering its top face is sewn by the sewing machine 6 to the material covering its side face. Reference number 10 shows the third sensor, which detects a hindmost

mattress corner in the direction of conveyance of the conveyor belt, for the purpose of slowing down the supply speed of the conveyor device and the sewing speed of the sewing device.

Fig. 2 shows that the top part of the conveyor belt 1 is supported by a smooth supporting plate 11. It also shows the swing mechanism 12 of the swingable arm 7, which can be, for example, a double-acting air cylinder. Fig. 3 shows that the sewing needle 13 of the sewing machine runs at an angle, in such a way that it can sew through the material on the top face of the mattress and the material on the side face of the mattress. For the sake of clarity, further details, such as the guide element for feeding in the covering strip for the sewing seam, are left out. What is shown is the first sensor 14, which detects the above-mentioned mattress corner for the purpose of stopping the drive units of conveyor belt and sewing machine, and operating the swingable arm for turning the mattress through 90° on the conveyor belt. The second sensor 15, by means of which the position of the needle 13 can be detected from the position of the drive wheel of the sewing machine 16, is also shown. The sensor 15 can also be placed elsewhere, for example at the needle. On detection of a mattress corner by sensor 14, said sensor 15 ensures that the sewing needle 13 remains in the extended position, so that when the swingable arm 7 comes into operation the mattress 9 is turned round the sewing needle 13 through 90° on the conveyor belt 1. After this, the swingable arm 7 returns automatically, and the next mattress edge can be sewn, following which the above-described actions are repeated.

Fig. 4 shows a second embodiment, in which an auxiliary needle 17 is used as the holding means for the mattress. In this embodiment, when a mattress corner has been detected by the sensor 14 the sewing needle 13 is stopped in the retracted position by means of the second sensor 15. The auxiliary needle 17 is then extended so that it penetrates into the mattress, and the swingable arm 7 is operated, so that the mattress turns around this auxiliary needle. Since the auxiliary needle is right next to the sewing needle, the next mattress edge can still be sewn further joining onto from the previous seam.

Fig. 5 shows the block diagram of the control device belonging to the sewing device shown in Fig. 4. The first sensor 14 is connected here to the drive units 18, 19, 20 and 21 of the conveyor belt, the sewing machine, the swingable arm and the auxiliary needle respectively. As soon as this first sensor 14 detects a hindmost mattress corner in the direction of conveyance of the conveyor belt 1, the drive units 18, 19 are switched off, and the drive units 20, 21 are switched on. The second sensor 15 for detection of the position of the sewing needle 13 is actuated and ensures that the drive unit 19 of the sewing machine is stopped at such a position that the sewing needle

13 is in the retracted position. If the auxiliary needle is very close to the sewing needle, the latter need not be retracted fully. In this way the mattress can easily be swung round the extended auxiliary needle 17.

The drive unit 18 for the belt and the drive unit 19 of the sewing machine can also be connected to the third sensor 10, which ensures that the two drive units are slowed down when it detects the above-mentioned mattress corner. Finally, these drive units 18, 19 of the belt and the sewing machine are also connected by a synchronization device 22, by means of which the mutual conveyance speeds of these drive units can be synchronized for conveying the mattress to be treated along the sewing machine in the correct manner.

### Claims

1. Device for sewing, along the edges of a mattress or cushion (9), the cover material covering the top and bottom of the mattress to the cover material covering the sides of the mattress, provided with a supporting face (1) which is movable for moving the mattress along a sewing machine (6) which has a sewing needle (13) which can be pushed through the cover material which covers the edge area of the top or bottom and the cover material which covers the adjacent edge area of the side, characterized in that the supporting face (1) is an endless conveyor providing a unidirectional movement (4) along the sewing machine (6), and that there is a swingable arm (7) which can be swung between a position parallel to and a position essentially perpendicular (8) to said direction of movement, whereby, in the latter position, at least the part of the arm (7) near the swivel point is lying beyond the sewing needle (13) in the direction of movement of the conveyor, near the swivel point of said arm (7) there is a first sensor (14) for the detection of a hindmost mattress corner in the direction of movement (14) of the conveyor (1), and holding means (13,17) for holding the mattress (9) at said corner, the sensor (14) and the drive units (19,18,21,20) for sewing machine, conveyor, holding means and swingable arm being connected to a control device suitable for changing the sewing speed and the speed of movement of respectively, the sewing machine (6) and conveyor (1), or for stopping the sewing machine (6) and conveyor (2) on detection of a corner and for bringing the holding means (13,17) and the swingable arm (7) into the operating position so that the mattress (9) can be swung round the held corner, and for subsequently returning the holding means (13,17) and the swingable arm (7) to the idle position again.

2. Device according to Claim 1, characterized in that provision is made for a second sensor (15) for detecting the position of the needle (13), said sensor being connected to the control device in such a way

that on detection of the said mattress corner by the first sensor (14) the needle (13) can be stopped in the extended position and in that position constitutes the holding means for the turning of the mattress (9).

3. Device according to Claim 1, characterized in that the holding means are an extendible and retractable auxiliary needle (17) near the sewing needle (13), and a second sensor (15) is provided to detect the position of the sewing needle (13) connected to the control device, in such a way that on detection of the said mattress corner by the first sensor (14) the sewing needle (13) can be stopped in the retracted position and the auxiliary needle (17) can be brought into the extended position.

4. Device according to one of the preceding claims, characterized in that, there is a third sensor (10) in the direction of movement of the mattress (9) before the sewing machine (6), which sensor (10) is connected in such a way to the control device that the driving speed of the drive units of sewing machine (6) and supporting face (1) can be reduced gradually on detection of the mattress corner.

5. Device according to one or more of the preceding claims, characterized in that the drive units (18, 19) of the supporting face and the sewing machine are coupled by a synchronization device (22) for synchronization of said drive units in such a way that the mattress (9) can be moved in a straight line along the sewing machine (6).

6. Device according to one or more of the preceding claims, characterized in that it is provided with a first memory element for storage of a first number of stitches, a second memory element for storage of a second number of stitches, a counting device for counting the corners detected by the first sensor, a counting device for adding or subtracting the stitches for counting the first number of stitches between the first stitch and the first corner, for counting the second number of stitches between the second and the third corner, and for subtracting the stitches from the second number of stitches after detection of the fourth corner, and an element connected to the drive units for comparison of the first and second number and for stopping the drive units if the second number has become equal to or smaller than the first number.

7. Device according to Claims 1 to 5, characterized in that it is provided with a first memory element for storing a first number of time units, a second memory element for storing a second number of time units, a counting device for counting the corners detected by the first sensor, a counting device for adding or subtracting the time units for counting the first number of time units between the first stitch and the first corner, for counting the second number of time units between the second and the third corner, and for subtracting the time units from the second number of time units after detection of the fourth corner, and an element connected to the drive units for

comparing the first and second number and for stopping the drive units if the second number has become equal to or less than the first number.

## Patentansprüche

1. Anlage zum Vernähen der die Oberseite und die Unterseite einer Matratze bzw. eines Kissens (9) überziehenden Abdeckung mit der die Seitenflächen der Matratze überziehenden Abdeckung entlang der Ränder der Matratze überziehenden mit einer Auflagefläche (1) ausgestattet ist, welche zum Bewegen der Matratze entlang einer Nähmaschine (6) beweglich ist, welche eine Nähnadel (13) besitzt die durch das Abdeckungsmaterial, das den Randbereich der Oberseite oder der Unterseite, und durch das Abdeckungsmaterial, das den angrenzenden Randbereich der Seitenfläche bedeckt, hindurchgestoßen werden kann dadurch **gekennzeichnet**, daß die Auflagefläche (1) ein endloses Transportmittel ist, das eine nur in einer Richtung verlaufende Bewegung (4) entlang der Nähmaschine (6) durchführt, und daß ein schwenkbarer Arm (7) vorhanden ist, der zwischen einer Stellung parallel zur Bewegungsrichtung und einer im wesentlichen senkrecht dazu orientierten Stellung (8) geschwenkt werden kann, wodurch in letzterer Stellung mindestens der in der Nähe des Drehpunktes befindliche Teil des Armes (7) in Bewegungsrichtung des Transportbandes jenseits der Nähnadel (13) liegt, und daß sich in der Nähe des Drehpunktes des Armes (7) ein erster Sensor (14) zur Erfassung der hintersten Matratzenecke in Bewegungsrichtung (4) des Transportmittels (1) sowie Halterungsmittel (17, 13) zum Festhalten der Matratze (9) an der genannten Ecke befinden, wobei der Sensor (14) und die Antriebseinheiten (19, 18, 21, 20) der Nähmaschine, das Transportmittel, die Halterungsmittel und der schwenkbare Arm an ein Steuergerät angeschlossen sind, das geeignet ist, mit Erfassen einer Ecke jeweils die Nähgeschwindigkeit und die Bewegungsgeschwindigkeit der Nähmaschine (1) bzw. des Transportmittels zu ändern, oder die Nähmaschine (6) und das Transportmittel (2) anzuhalten sowie die Halterungsmittel (13, 17) und den schwenkbaren Arm (7) in die Arbeitsstellung zu bringen, so daß die Matratze (9) um die festgehaltene Ecke geschwenkt werden kann, und anschließend die Halterungsmittel (13, 17) und den schwenkbaren Arm (3) wieder in die Ruhestellung zurückzuführen.

2. Anlage nach Anspruch 1, dadurch **gekennzeichnet**, daß ein zweiter Sensor (15) zur Erfassung der Stellung der Nadel (13) vorgesehen ist, wobei der Sensor an das Steuergerät derart angeschlossen ist, daß mit Erfassen der Matratzenecke durch den ersten Sensor (14) die Nadel (13) in der ausgefahrenen Stellung angehalten werden kann und in dieser Stellung beim Drehen der Matratze (9) das Halterungsmittel

bildet.

3. Anlage nach Anspruch 1, dadurch **gekennzeichnet**, daß die Halterungsmittel eine ausfahr- und einziehbare Hilfsnadel (17) in der Nähe der Nähna-  
del (13) ist, und ein zweiter Sensor (15) zur Erfassung der  
Stellung der Nähna-  
del (13) vorgesehen und an das Steuergerät angeschlossen ist, derart, daß mit Erfassung der Matratzenecke durch den ersten Sensor (14) die Nähna-  
del (13) in der eingezogenen Stellung angehalten und die Hilfsnadel (17) in die ausgefahrene Stellung gebracht werden kann.

4. Anlage nach einem der vorhergehenden Ansprüche, dadurch **gekennzeichnet**, daß ein dritter Sensor (10) in Bewegungsrichtung der Matratze (9) vor der Nähmaschine (6) vorhanden ist und in der  
Weise an das Steuergerät angeschlossen ist, daß die Antriebsgeschwindigkeit der Antriebseinheiten der Nähmaschine (6) und der Auflagefläche (1) mit Erfassen der Matratzenecke allmählich verringert werden kann.

5. Anlage nach einem oder mehreren der vorhergehenden Ansprüche, dadurch **gekennzeichnet**, daß die Antriebseinheiten (18, 19) der Auflagefläche und der Nähmaschine durch eine Synchronisierungseinrichtung (22) gekuppelt sind, um die Antriebseinheiten so zu synchronisieren, daß die Matratze (9) geradlinig entlang der Nähmaschine (6) bewegt werden kann.

6. Anlage nach einem oder mehreren der vorhergehenden Ansprüche, dadurch **gekennzeichnet**, daß sie mit einem ersten Speicherelement zum Speichern einer ersten Anzahl von Stichen, einem zweiten Speicherelement zum Speichern einer zweiten Anzahl von Stichen, einer Zählleinrichtung zum Zählen der vom ersten Sensor erfaßten Ecken, einer Zählleinrichtung zum Addieren oder Subtrahieren der Stiche zwecks Zählung der ersten Anzahl der Stiche zwischen dem ersten Stich und der ersten Ecke, zwecks Zählung der zweiten Anzahl der Stiche zwischen der zweiten und der dritten Ecke, und zum Subtrahieren der Stiche von der zweiten Anzahl der Stiche nach Erfassung der vierten Ecke; sowie mit einem an die Antriebseinheiten angeschlossenen Element zum Vergleichen der ersten und der zweiten Anzahl, und zum Anhalten der Antriebseinheiten im Falle, daß die zweite Anzahl die erste Anzahl erreicht hat oder kleiner ist als diese, ausgestattet ist.

7. Anlage nach den Ansprüchen 1 bis 5, dadurch **gekennzeichnet**, daß sie mit einem ersten Speicherelement zum Speichern einer ersten Anzahl von Zeiteinheiten, einem zweiten Speicherelement zum Speichern einer zweiten Anzahl von Zeiteinheiten, einer Zählleinrichtung zum Zählen der vom ersten Sensor erfaßten Ecken, einer Zählleinrichtung zum Addieren oder Subtrahieren der Zeiteinheiten zwecks Zählen der ersten Anzahl von Zeiteinheiten zwischen dem ersten Stich und der ersten Ecke, zwecks Zählen der zweiten Anzahl der Zeiteinheiten zwischen der

zweiten und der dritten Ecke, und zum Subtrahieren der Zeiteinheiten von der zweiten Anzahl der Zeiteinheiten nach Erfassung der vierten Ecke; sowie mit einem an die Antriebseinheiten angeschlossenen Element zum Vergleichen der ersten und der zweiten Anzahl, und zum Anhalten der Antriebseinheiten im Falle, daß die zweite Anzahl die erste Anzahl erreicht hat oder kleiner ist als diese, ausgestattet ist.

## Revendications

1. Dispositif destiné à coudre, le long des bords d'un matelas ou d'un coussin (9), la matière de couverture couvrant les parties supérieure et inférieure du matelas sur la matière de couverture couvrant les côtés du matelas, comportant une face de support (1) qui est mobile pour déplacer le matelas le long d'une machine à coudre (6) qui comporte une aiguille à coudre (13) qui peut être poussée à travers la matière de couverture qui couvre la zone de bord de la partie supérieure ou de la partie inférieure et la matière de couverture qui couvre la zone de bord adjacente du côté, caractérisé en ce que la face de support (1) est une bande transporteuse sans fin communiquant un mouvement unidirectionnel (4) le long de la machine à coudre (6) et en ce qu'il existe un bras pivotant (7) qui peut pivoter entre une position parallèle à ladite direction de mouvement et une position sensiblement perpendiculaire (8) à ladite direction, de sorte que, dans la dernière position, au moins la partie du bras (7) voisine du point de pivot est située au-delà de l'aiguille à coudre (13) dans la direction de mouvement de la bande transporteuse, près du point de pivot dudit bras (7) il existe un premier capteur (14) pour la détection d'un coin le plus arrière du matelas dans la direction de mouvement (4) de la bande transporteuse (1) et des moyens de maintien (13, 17) pour tenir le matelas (9) dans ledit coin, le capteur (14) et les unités d'entraînement (19, 18, 21, 20) de la machine à coudre, de la bande transporteuse, des moyens de maintien et du bras pivotant étant reliés à un dispositif de commande apte à modifier la vitesse de couture et la vitesse du mouvement, respectivement, de la machine à coudre (6) et de la bande transporteuse (1), ou à arrêter la machine à coudre (6) et la bande transporteuse (1) lors de la détection d'un coin, et à amener le moyen de maintien (13, 17) et le bras pivotant (7) dans la position de fonctionnement de façon que le matelas (9) puisse pivoter autour du coin tenu, et à ramener ensuite les moyens de maintien (13, 17) et le bras pivotant (7) dans la position inactive.

2. Dispositif selon la revendication 1, caractérisé en ce qu'il est prévu un deuxième capteur (15) pour détecter la position de l'aiguille à coudre (13), ledit capteur étant relié au dispositif de commande d'une manière telle que, lors de la détection dudit coin de

matelas par le premier capteur (14), l'aiguille à coudre (13) peut être arrêtée dans la position étendue et constitue dans cette position le moyen de maintien pour la rotation du matelas (9).

3. Dispositif selon la revendications 1, caractérisé en ce que les moyens de maintien consistent en une aiguille auxiliaire (17) qui peut être étendue ou rétractée, voisine de l'aiguille à coudre (13), et qu'un deuxième capteur (15) est monté pour détecter la position de l'aiguille à coudre (13) reliée au dispositif de commande, d'une manière telle que, lors de la détection dudit coin de matelas par le premier capteur (14), l'aiguille à coudre (13) peut être arrêtée dans la position rétractée et l'aiguille auxiliaire (17) peut être amenée dans la position étendue.

4. Dispositif selon l'une des revendications précédentes, caractérisé en ce qu'il est prévu un troisième capteur (10) dans la direction de déplacement du matelas (9) avant la machine à coudre (6), capteur (10) qui est relié au dispositif de commande d'une manière telle que la vitesse d'entraînement des unités d'entraînement de la machine de coudre (6) et de la face de support (1) peut être réduite progressivement lors de la détection du coin de matelas.

5. Dispositif selon une ou plusieurs des revendications précédentes, caractérisé en ce que les unités d'entraînement (18, 19) de la face de support et la machine à coudre sont accouplées par un dispositif de synchronisation (22) en vue d'une synchronisation desdites unités d'entraînement d'une manière telle que le matelas (9) peut être déplacé en ligne droite le long de la machine à coudre (6).

6. Dispositif selon une ou plusieurs des revendications précédentes, caractérisé en ce qu'il est prévu un premier élément de mémoire pour la mémorisation d'un premier nombre de points, un deuxième élément de mémoire pour la mémorisation d'un deuxième nombre de points, un dispositif de comptage pour compter les coins détectés par le premier capteur, un dispositif de comptage pour additionner ou soustraire les points pour compter le premier nombre de points entre le premier point et le premier coin, pour compter le deuxième nombre de points entre le deuxième et le troisième coins, et pour soustraire, du deuxième nombre de points, les points après détection du quatrième coin, et un élément relié aux unités d'entraînement pour comparer le premier et le deuxième nombres et pour arrêter les unités d'entraînement si le deuxième nombre est devenu égal ou inférieur au premier nombre.

7. Dispositif selon les revendications 1 à 5, caractérisé en ce qu'il comprend un premier élément de mémoire pour mémoriser un premier nombre d'unités de temps, un deuxième élément de mémoire pour mémoriser un deuxième nombre d'unités de temps, un dispositif de comptage pour compter les coins détectés par le premier capteur, un dispositif de comptage pour additionner ou soustraire les unités de

temps pour compter le premier nombre d'unités de temps entre le premier point et le premier coin, pour compter le deuxième nombre d'unités de temps entre le deuxième et le troisième coins et pour soustraire du deuxième nombre d'unités de temps les unités de temps après détection du quatrième coin, et un élément relié aux unités d'entraînement pour comparer le premier et le deuxième nombres et pour arrêter les unités d'entraînement si le deuxième nombre est devenu égal ou inférieur au premier nombre.

fig-1

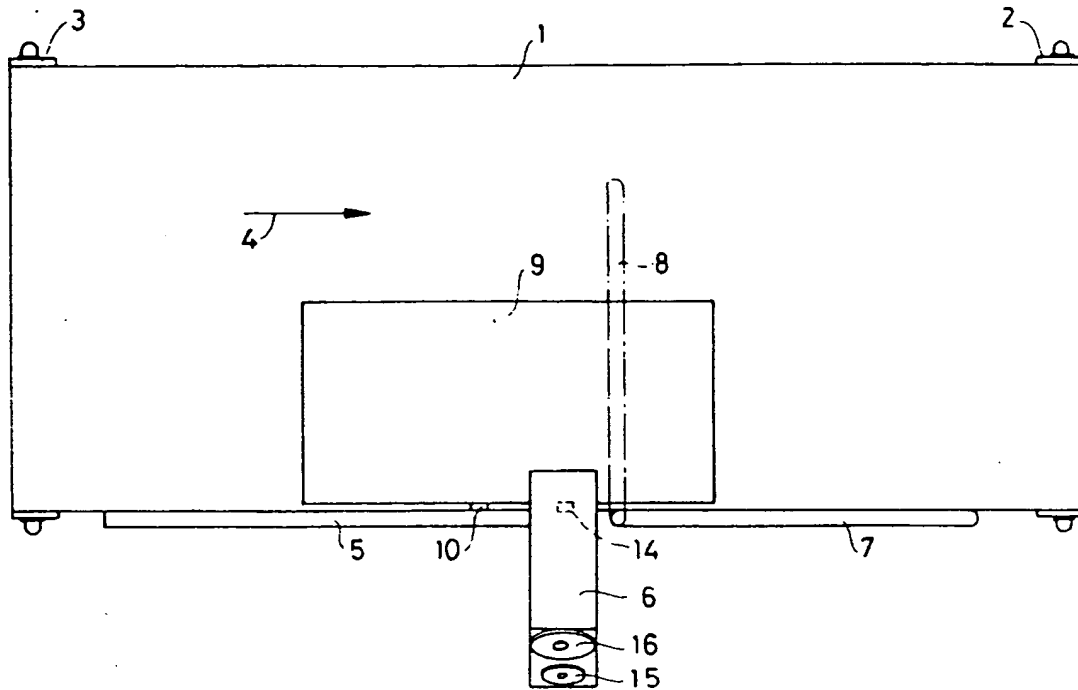


fig-2

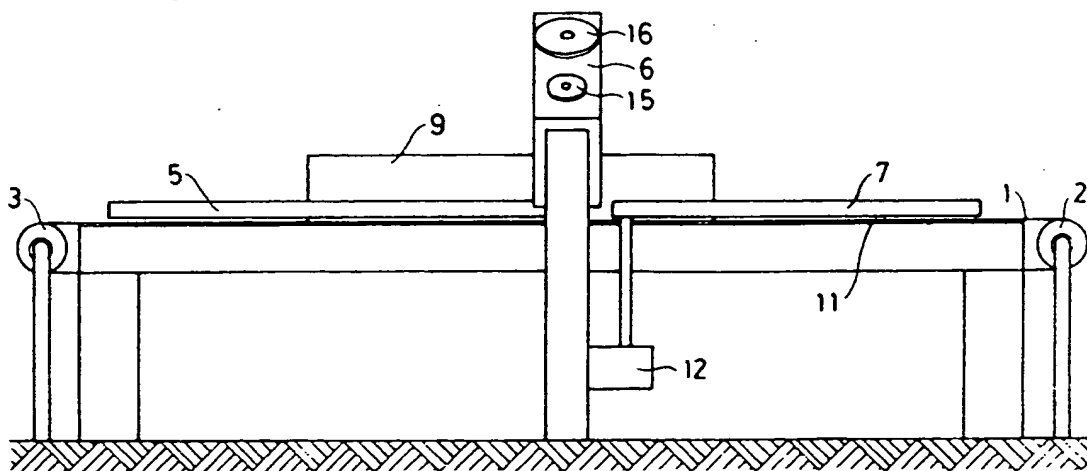




fig - 3

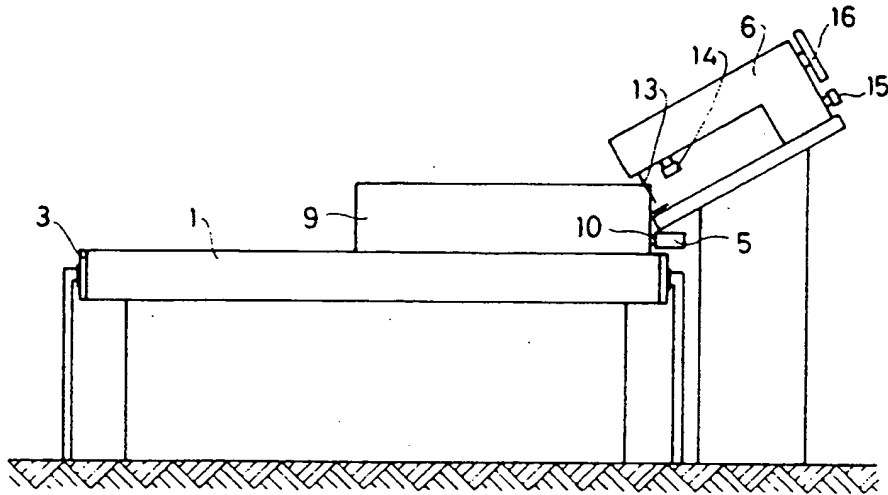


fig - 4

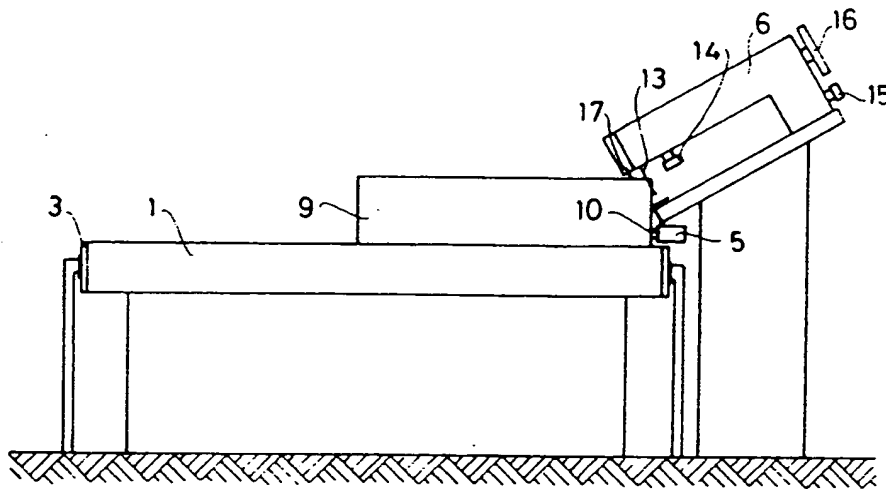


fig-5

